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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/530,220

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EXAMINER

RAO, G NAGESH

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/530,220	Applicant(s) ENOKIDO ET AL.	
	Examiner G. NAGESH RAO	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continued Examination Under 37 CFR 1.114

1) A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on 1/23/08 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2) Claims 1-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Jasper (US Patent No. 5,739,796).

Jasper 796 pertains to a multidimensional stacked photonic band gap crystal product whereby it describes in details two dimensional photonic crystal, wherein

on a plane in which four adjoining unit lattices are arranged so as to have one angle in common with the unit lattice being a rectangle whose shorter side x_1 has a length of x_1 and whose longer side y_1 has a length of y_1 , first dielectric regions each being columnar and having a rectangular cross section whose shorter side x_2 has a length of x_2 and whose longer side y_2 has a length of y_2 are disposed on said shorter sides x_1 and said longer sides y_1 of each rectangular unit lattice, characterized in that said first dielectric region is arranged so that the midpoint of said shorter side x_1 and the midpoint of said longer side y_1 and the center of said rectangular cross section substantially coincide, said longer sides y_2 of each said first dielectric region are substantially parallel to each other, furthermore jasper 796 teaches the crystal formed of second dielectric region surrounding said first dielectric region and having a dielectric constant different from that of said first dielectric constant region, one being formed from a dielectric material and the other from a gas, (which is a process limitation imposed on the product structure and bears no weight to the structural components of the material-product (See MPEP 2113 for further details on Product by Process claims). Jasper 796 also teaches that the dielectric material utilized for the two dimensional photonic crystal is that of a Barium-Titanate Oxide (BSTO) ceramic structure (which are very well known

photonic crystal materials). Finally as can be seen in Figure 3 of Jasper 796, is a base plate along with

a plurality of said first dielectric regions erected from said base and formed from a dielectric material the same as that of said base, and a second dielectric region surrounding said first dielectric region (See Figure 3 and Col 6 Line 21 to Col 7 Line 7, as well Figs 1-10 and Cols 1-20 Lines 1-68).

However Jasper 796 fails to teach the appropriate dimensions put forth with respect to the ratio of the x_1 and y_1 values. It is the examiner's opinion that these are dimensions that are result effective variables and obvious to modify or come about with the result of the operator's desired output product.

It would be obvious to one having ordinary skill in the art at the time of the present invention to modify said parameters and derive a two dimensional crystal product with those x_1 and y_1 values based on desired processing conditions in order to optimize the quality of the crystal product formed.

3) Claims 1-6 and 8-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shirane (US PG Pub 2002/0146196).

Shirane 196 pertains to a multidimensional stacked photonic band gap crystal product whereby it describes in details two dimensional photonic crystal, wherein on a plane in which four adjoining unit lattices are arranged so as to have one angle in common with the unit lattice being a rectangle whose shorter side x_1 has a length of x_1 and whose longer side y_1 has a length of y_1 , first dielectric regions each being columnar and having a rectangular cross section whose shorter side x_2 has a length of x_2 and whose longer side y_2 has a length of y_2 are disposed on said shorter sides x_1 and said longer sides y_1 of each rectangular unit lattice, characterized in that said first dielectric region is arranged so that the midpoint of said shorter side x_1 and the midpoint of said longer side y_1 and the center of said rectangular cross section substantially coincide, said longer sides y_2 of each said first dielectric region are substantially parallel to each other, furthermore Shirane 196 teaches the crystal formed of second dielectric region surrounding said first dielectric region and having a dielectric constant different from that of said first dielectric constant region, one being formed from a dielectric material and the other from a gas, (which is a process limitation imposed on the product structure and bears no weight to the structural components of the material-product (See MPEP 2113 for further details on Product by Process claims). Finally as can be seen in Figure 3 of Shirane 196, is a base plate along with a plurality of said first

dielectric regions erected from said base and formed from a dielectric material the same as that of said base, and a second dielectric region surrounding said first dielectric region (See Paragraphs 0012-0014 and Figure 1 as well Paragraphs 0001-0102 and Figures 1-12).

However Shirane 196 fails to teach the appropriate dimensions put forth with respect to the ratio of the x_1 and y_1 values. It is the examiner's opinion that these are dimensions that are result effective variables and obvious to modify or come about with the result of the operator's desired output product.

It would be obvious to one having ordinary skill in the art at the time of the present invention to modify said parameters and derive a two dimensional crystal product with those x_1 and y_1 values based on desired processing conditions in order to optimize the quality of the crystal product formed.

Response to Arguments

4) The terminal disclaimer filed with respect to the ODP rejection has satisfied the criteria and thus the rejection has been removed. Applicant's arguments filed towards the USC 102/103 and USC 103 rejections on 9/10/07 have been fully considered but they are not persuasive. Examiner has noted the rationale and reasoning for arguments submitted by applicants to overcome the prior art. As

notated by the examiner before the limitations as prescribed for differentiation by the applicant are really resultant effective variables that are determined by the operator's desired preference in the shape of the 2D photonic crystal. New limitations suggest an extended bandgap width of 20% or greater, the prior art has bandgap widths which are easily modifiable via routine experimentation. Examiner suggests said arguments would be better suited if a 37 CFR 1.132 affidavit/declaration was filed un-obviating the applied references indicating the unexpected result benefiting from the "claimed" invention to how it would substantially differ from the prior art. No differences are seen as substantially distinguishing between the prior art and claimed invention that would suggest said 2D photonic crystal differs from currently known and understood prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to G. NAGESH RAO whose telephone number is (571)272-2946. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571)272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GNR

/Robert M Kunemund/

Primary Examiner, Art Unit 1792